

L 39680-66 EWT(d)/ENP(v)/T/ENP(k)/ENP(h)/ENP(1) IEP(c) BB/GG/GD-2/BC
ACC NR: AP6009500 SOURCE CODE: UR/0105/66/C00/003/0001/0008

AUTHOR: Kagan, B. M. (Doctor of technical sciences, Professor);
Dolkart, V. M. (Candidate of technical sciences); Novik, G. Kh. (Candidate of
technical sciences); Kanevskiy, M. M. (Engineer); Stepanov, V. N. (Engineer)

ORG: none

TITLE: Logical design of the VNIEM-3 control computer

SOURCE: Elektrichestvo, no. 3, 1966, 1-8

TOPIC TAGS: digital computer, computer design, control computer / VNIEM-3
control computer

14 ABSTRACT: The logical design of a new VNIEM-3 universal control digital
computer is explained. The computer is intended for complex automation of
processes in various industries (metallurgical, chemical, electric-power,

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UDC: 681.142.322

S/019/62/000/016/001/056
A156/A126

AUTHORS: Khimich, G. L., Koryakin, K. V., Valugin, K. M., Yereyev, N. V.,
Tishchenko, N. A., Birfel'd, A. G., Kagan, B. M., Gendel'man, B. M.

TITLE: An automatic mill for blooms and slabs.

PERIODICAL: Byulleten' izobreteniy, no. 16, 1962, 16 - 17

TEXT: Class 7a, 1. No. 149376 (725325/22 of April 4, 1961). 1) This mill for blooms and slabs is novel in that it is more productive, requires no manual attendance and produces blooms and slabs in a fully-automated process. It is provided with a continuous circular feed of ingots effected by ingot carriers, a complex of machines and mechanisms which automatically convey ingots to the rolls following a predetermined program, a manipulator with predetermined reduction pressure for every pass and a link-chain support which can turn over ingots at varied speeds without pauses for lowering hooks. It also has a self-braking mechanism for pressure screws, an automatic optimizing system which controls the rolling, a flame snagging machine provided with a low-inertia system of follow-up cutting heads, a contactless meter for blooms and slabs.

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8/019/62/000/016/001/056
A156/A126

An automatic mill for blooms and slabs

a device for freely stopping them at the shears to cut them to the desired lengths, a TV flaw detector, an automatic lettering die, a highly-productive bloom removing mechanism and an automatic mechanism that brings cars under the conveyer. 2) An automatic blooming mill as in 1), different in that it is fitted with contactless control systems containing mercury rectifiers, generators and a synchronous motor for the main unit, manipulator racks, roll tables, bed-plate rollers and shears. 3) An automatic blooming mill as in 1) and 2), different in that it is fitted with quality control TV system and pickups which continuously control and watch the position of the metal at a given moment. 4) An automatic blooming mill as in 1) - 3), different in that the rolled product is cut to size with the aid of a special meter, and its weight is determined to meet the required cross-sections, types and lengths. The final products are routed behind the shears in assorted flows.

✓

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[Abstracter's note: Complete translation]

Card 2/2

KAGAN, D., inzh.; KNEI'TS, K., inzh.

Using polymeric materials in sanitary engineering. Zhil.-kon.
khoz. 8 no.11:8-10 '58. (MIRA 11:12)
(Polymers) (Pipe fittings)

KAGAN, D. B.

D. B. Kagan, "Partial resonance in short wave transmitter circuits." Scientific Session Devoted to "Radio Day", May 1958, Trudrezervizdat, Moscow, 9 Sep 58.

Certain cases of partial resonance, methods to detect and combat them are analyzed.

KAPAN, L. P. i SPIVOK, R. Ya

22018 Kapan, L.P. i Spivok, R. Ya. Adrenalin v sayvorotke grozi bol'nykh glaznykh.
Trach-b. Gelo, 1949, No. 7, strb 581-84

SC: Ietodis' Zhurnal'nykh Statey, No. 29, Moskva, 1949.

Kagan, D.E.
KAGAN, D.E., kandidat meditsinskikh nauk; RASHAP, E.Ya., staryiy nauchnyy
sotrudnik

Investigations on the adrenergic and cholinergic activity of the
blood and urine in peptic ulcer. Terap.arkh. 29 no.4:27-30 Ap '57.
(MIRA 10:10)

1. Iz Ukrainskogo tsentral'nogo nauchno-issledovatel'skogo instituta
ekspertizy trudosposobnosti i organizatsii truda invalidov.

(PEPTIC ULCER, physiology,
adrenergic & cholinergic substances in blood & urine
(Rus))

(SYMPATHOMIMETICS, determination,
in blood & urine in peptic ulcer (Rus))

(PARASYMATHOMIMETRIC, determination,
same)

KAGAN, D. E. (USSR)

"Certain Aspect of Metabolism of Adrenaline and "drenaline-like
Substances in the Urine and Blood in Various Pathological States."

Report presented at the 5th International Biochemistry Congress,
Moscow, 10-16 Aug 1961

KAGAN, L. I.

11B

A micro-method for the determination of acetone bodies in tissue. (A modification of the method of Cantoni, D. K. Kagan and Yu. A. Trontskii. *J. Physiol.* (L. S. S. R.) 27, 252 (in German, 258) (1949).) - For the detn. of acetone bodies 1 g. of tissue is ground with 0.5 g. of sand, 8 cc. of H_2O and 1 cc. of 1% H_2SO_4 , transferred to a 25 cc. vol. flask, treated with 1 cc. of 10% Na tungstate, made up to the mark and filtered, after which 15 cc. of the filtrate is treated with 0.8 cc. of 10% $CuSO_4$ and 2 cc. of $Ca(OH)_2$, made up to 20 cc. and filtered after 1 hr. The latter treatment removes polysacchar. removed in Cantoni's method (C. A. 20, 4789). The filtrate (15 cc.) is distd. with 0.4 cc. of concd. H_2SO_4 and 1.2 cc. of a soln. of 50 g. of $K_2Cr_2O_7$, 60 cc. of 95% H_2SO_4 , and 950 cc. of H_2O . The distillate (4.5-5.8 cc. in 5-7 min.) is add. to 5 cc., and 2 cc. treated with 0.5 cc. of satd. NaOH and 2 drops of salicylaldehyde. The soln. is then heated for 5 min. in a boiling water bath, allowed to stand for 22-24 hrs. and compared with standard solns. in a colorimeter. Amts. of $MgCO_3$ of 1-0.8 mg. % were detd. within 10% in the presence of 50-200 mg. of lactic acid. S. A. K.

ASH-51-A METALLURGICAL LITERATURE CLASSIFICATION

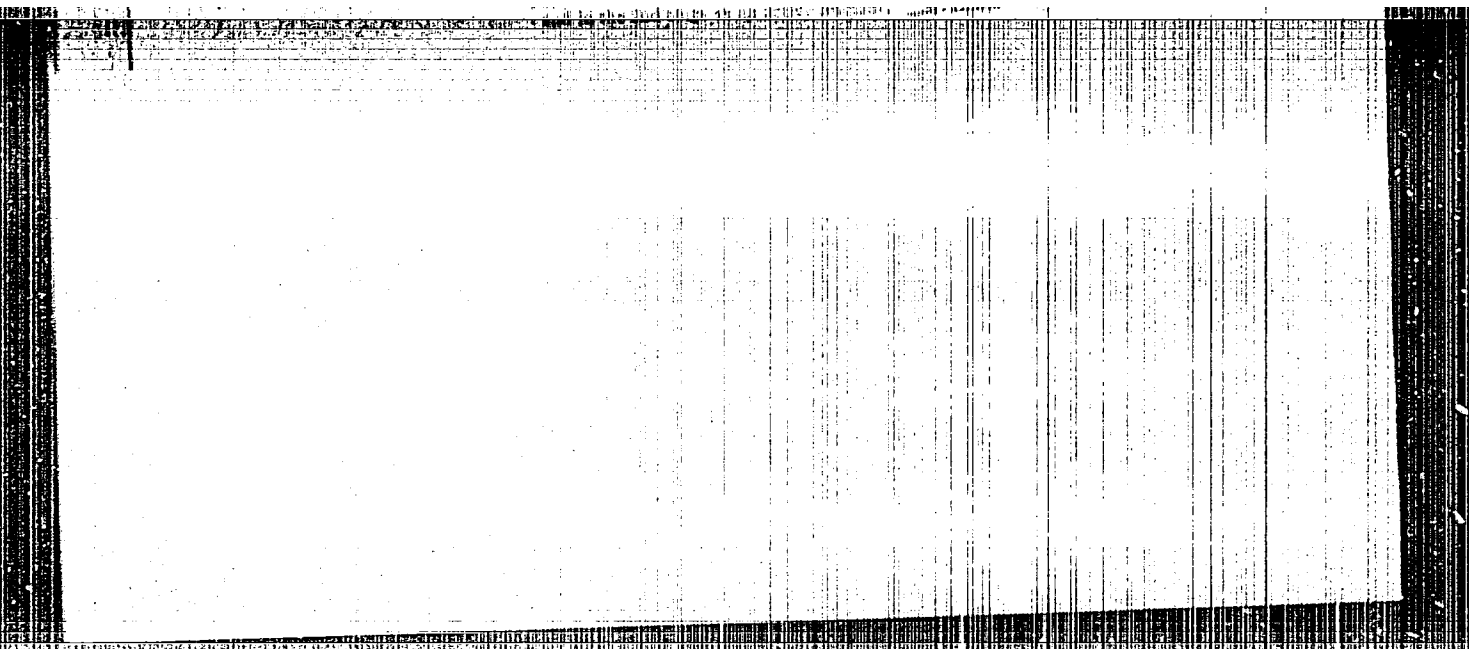
KHGM, D. I., Eng.

"The Synthesis and Investigation of Phenylloxane Oxidation." (and
Tech Sci, Moscow Order of Lenin Chemico-technological Inst. and
D. I. Mendeleev, 6 Oct 54. (M., 22 Sep 54)

SC: Sum 432, 29 Mar 55

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619910010-4



APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619910010-4"

S/081/62/000/007/028/033
B168/B101

AUTHORS: Kagan, D. F., Kazanskiy, Yu. N., Nemlikher, M. Ya.

TITLE: Metal coating of plastics by the method of evaporating in a high vacuum

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 7, 1962, 623, abstract 4P81 (Sb. "Plastmassy v mashinostr.". M., Mashgiz, 1959, 136-143)

TEXT: Methods of coating plastics with metal are detailed and the principal features of the method of evaporating metals in a vacuum are outlined. The adhesion of a metal coating to the surface of organic glass is examined and a method of determining the quality and thickness of the metal layer is set forth; the apparatus for the metal-plating of plastics is described and the electrical conductivity of the layer is given. ✓

[Abstracter's note: Complete translation.]

Card 1/1

KAGAN, D. E.

PLASTIC BOOK EXHIBITION SOV/284
Moscow. Dos naucho-tekhnicheskoy propagandy issued P.E. Dzerzhinskogo
Plastmassy y mashinostroyeniya (Plastics in Machine Building) Moscow, MashGiz,
1979. 236 p. Ervina slip inserted. 8,000 copies printed.
Sponsoring Agency: Otkuchestvo po razprostraneniya politicheskikh i nauchnykh
izdaniy MVD.
Ed. (Title page): V.I. Zaygorodnyy; Ed. (Inside book): B.M. Melnik, Engineer;
Ed. of Publishing House: G.M. Kozlovskiy, Tech. Ed.: A. P. Dvornov,
Managing Ed. for literature on Machine Building and Instrument Making
(MashGiz): B.V. Pokrovskiy, Engineer.

REMARKS: This collection of articles is intended for engineers and technicians
in the machine-building industry.

COMMENT: This collection reviews the progress made by the Soviet Union in the
field of manufacturing new plastic materials and fabricating them into plastic
material articles for use in the machine-building industry. Physicochemical
and dielectric properties of phenolite, decroplite, fluoroplastics, epoxy resins,
polyamides, and laminated plastics are analyzed and their
use in machine building described. Characteristics of the pressing process described.
Methods of coating with plastics as a protection against corrosion are explained.
Methods of coating with plastics as a protection against corrosion are explained.
and metallization of plastics achieved by various methods. The use of plastics in
equipment used for manufacturing and finishing plastics and articles made of
plastics. Mechanization of certain operations and automatic control of various
processes are discussed. No patentability are mentioned. References accompany
individual articles.

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Vlasov, L.G. and E.F. Reiznerich. Polyamide Resins

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Chapman, J.E.; Laminated Plastics With Phenolic Resin and Paper
Used in Construction Material

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Reiznerich, E.F., and V.I. Zaygorodnyy -- Visker and Kiff Reinforced
Plastics for Electrical Insulation

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Kilbinger, J.E. Bonding of Metals

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Palmer, J.E. Organosilicon Polymers Used in Machine Building

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Curry, E.E. Technique of Pressing Thermoplastic Plastic Material

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Arnsperg, E.E. Applying Plastic Coating by Spraying During the

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Brooklyn, B.E. New Method of Manufacturing Molds and Patterns Made

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Reiznerich, E.F. Processing Thermoplastic Sheets by Pneumatic and

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Reiznerich, E.F., and V.I. Zaygorodnyy. Pressure Cast of Polyamides

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Reiznerich, E.F. Problems of Designing Press Molds for Fabricating

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Articles Made of Plastic Material

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Reiznerich, E.F., Zaygorodnyy, and B.M. Melnik. Metallization of

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Plastics Achieved by High Temperature Treatment

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Lavin, A.E. Equipment for Fabricating Articles Made of Plastics

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Zaygorodnyy, V.I. Molding Machines for Forming Articles From

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Molding Powder

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Zaygorodnyy, V.I. Hydraulic Presses for Processing Plastic Material,

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SHEVELEV, F.A.; KAGAN, D.F.; KNEL'TS, K.F.

Project of new technical specifications and assortments of
polyvinylchloride pipes for delivery conduits. Vol. 1 san.
tekh. no.2:30-34 F '59. (MIRA 12:2)
(Vinyl polymers) (Pipe--Standards)

SHEVELEV, F.A.; KAGAN, D.F., kand.tekhn.nauk


Prospects for using polymers in sanitary engineering. Izv.
ASIA no.3:35-47 '59. (MIRA 13:6)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury
SSSR.

(Pipe, Plastic)

S/184/60/000/004/011/021
A109/A029

AUTHORS: Kagan, D.F., Candidate of Technical Sciences; Shapiro, G.I.; Gus-
ev, G.G.; - Graduate Engineers

TITLE: On the Use of Lined Pipes 

PERIODICAL: Khimicheskoye Mashinostroyeniye, 1960, No. 4, pp. 34 - 36

TEXT: At present steel pipes lined with vinyl plastics are produced by the Pervoural'skiy starotrubnyy zavod (Pervoural'sk Pipe Plant) and the Dnepropetrovskiy truboprovkatnyy zavod im. V.I. Lenina (Dnepropetrovsk Pipe Rolling Plant imeni V.I. Lenin). The production method is based on simultaneous thermal processing of metal pipes and of prestressed plastics pipes (Refs. 1 and 4). In some cases the adhesion of the lining was defective near pipe joints and led to longitudinal displacement of the lining. The lining is elastically pressed to the metal pipe which causes a considerable friction. At normal temperatures the stress needed to push the lining out of the pipe is 220 kg. After 5 h at 60°C the lining drops out at a slight pressure. This lack of firm adhesion necessitates a careful choice of pipe joints. Figure 3 shows a pipe root before and after test. Joints excluding a dislocation of lining are shown in Figure 4 and

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On the Use of Lined Pipes

S/184/60/000/004/011/021

A109/A029

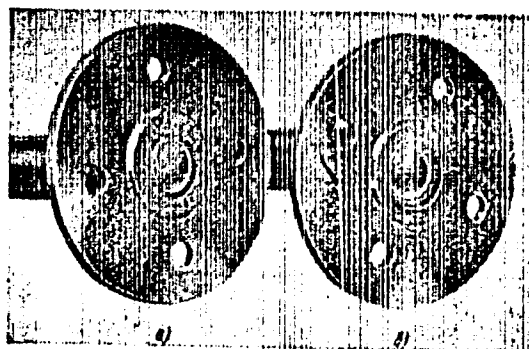
specific construction information is given. Their common feature is the appearance of longitudinal stress in the lining at changing temperatures. Compressive stress is negligible and does not affect the shape of the lining. Tensile stress can be considerable but has no adverse effect as the safety coefficient of the lining is sufficient. At an elasticity modulus of $E = 40,000 \text{ kg/cm}^2$ and a temperature drop of 50°C the relative expansion of the lining is 0.34%. Stresses were determined according to Hooke's law and are equal to 135 kg/cm^2 which does not exceed the tensile strength of vinyl plastics. There are 5 figures, 1 table and 7 references: 1 English and 6 Soviet. ✓

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On the Use of Lined Pipes

3/184/60/000/004/011/021
A109/A029

Figure 3. Root of a Lined Pipe:
a - before testing; b - after
testing with water at 70°C in the
course of 5 h.



Фиг. 3. Торец футерованной трубы:
а — до испытания; б — после испытания водой при 70° в течение
5 час.

Card 3/4

S/028/60/000/008/006/010
B013/B054

AUTHOR: Kagan, D. F.

TITLE: Pressure Pipes of High-pressure Polyethylene ✓

PERIODICAL: Standartizatsiya, 1960, No. 8, pp. 31 - 34

TEXT: Provisional technical specifications for pressure pipes of high-pressure polyethylene BTY-M 861-60 (VTU M-861-60) have been worked out at the NII sanitarnoy tekhniki Akademii stroitel'stva i arkhitektury SSSR (Scientific Research Institute of Sanitary Engineering of the Academy of Building and Architecture USSR). The nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute of Synthetics), the Rizhskiy zavod polietilenovykh izdeliy (Riga Works of Polyethylene Products), and the Okhtinskiy khimkombinat (Okhta Chemical Kombinat) in Leningrad have been cooperating. It can be expected that corresponding standards will be established on the basis of these specifications. For a thorough standardization of the production and application of polyethylene pipes, the International Standardization Organization established a special subcommittee ISO/TK-5/PK-6 for plastic pipes and fittings to which

Card 1/2

KAGAN, D.F.

Plastics in sanitation. Plast.massy no.9:39-41 '60.

(MIRA 13:11)

(Sanitary engineering--Equipment and supplies)
(Plastics)

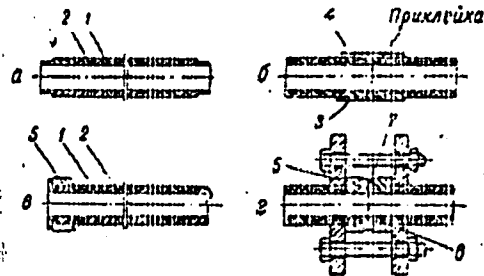
S/193/60/000/012/013/018
A004/A001

AUTHORS: Kagan, D. F., Shapiro, G. I.

TITLE: Lined Pipes and Their Application in the National Economy

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, 1960, No.12, pp.56-57

TEXT: The Nauchno-issledovatel'skiy institut sanitarnoy tekhniki Akademii stroitel'stva i arkhitektury SSSR (Scientific Research Institute of Sanitary Engineering of the Academy of Civil Engineering and Architecture of the USSR) has developed a new method and technology of producing pipes lined with vinyl-plastics. The lined pipe, shown in the illustration is composed of a sheathing pipe of grade 10 or 20 carbon steel and an inner plastic pipe pressed against the outer steel pipe. There are no additional bonds between the plastic layer and sheathing which facilitates the production. The illustration shows how detachable and non-detachable pipe joints are produced.



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S/193/60/000/012/013/018

Lined Pipes and Their Application in the National Economy A004/A001

Figure:

a - pipe with protruding ends of the lining layer; δ (b) - non-detachable glued pipe joint; ϵ (v) - pipe with flanged ends of the lining layer; 2 (g) - detachable pipe joint; 1 - metallic sheathing; 2 - lining layer; 3 - vinylplastic sleeve; 4 - metallic coupling; 5 - end bushing; 6 - free flange; 7 - washer. The plastic lining makes the metal pipe corrosion-resistant, while the metallic pipe relieves the plastic one from internal pressure by taking up the whole load. Tests carried out in various fields of industry showed that this kind of pipe operates satisfactorily at temperatures in the range of 70 - 90°C and at high pressures, while ordinary low-pressure vinylplastic pipes would not stand more than 50-55°C. The Dnepropetrovskiy truboprovodnyy zavod im. Lenina (Dnepropetrovsk Pipe Rolling Plant im. Lenin) and the Pervoural'skiy starotrubnyy zavod (First Ural Old Pipe Plant) manufactured vinylplastic-lined pipes from 10 to 100 mm in diameter. It is pointed out that carbon-steel pipes lined with vinylplastics are considerably cheaper than stainless steel pipes and, by their longer life, cut down service costs considerably. The authors mention a number of foreign firms producing lined pipes, e. g. Johns and Lowling (USA), Tube de la Meuse (Belgium), Huels and Dynamit A.G., (West Germany), and point out that various compounds on polyvinylchloride basis and copolymers of vinyl chloride are used as

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Lined Pipes and Their Application in the National Economy A004/A001

S/193/60/000/012/013/018

lining. The cost price of the lined pipes manufactured in USA is lower than those made by the First Ural Old Pipe Plant, but, according to the authors, the latter will produce pipes in the next future at prices lower than the foreign ones. The authors stress the point that successful service is only warranted if the pipe joints with their profile parts and armature are made according to the technical requirements under due consideration of the specific characteristics of lined pipes, viz. the presence of two layers, considerable difference in the coefficient of linear expansion of the two materials, dependence of the physical-mechanical properties of plastics on the temperature, etc. There is 1 figure.

Card 3/3

KAGAN, D.F., kand. tekhn.nauk; VANYAKIN, D.M.; YEKHLAKOV, S.V., inzh.;
IFTINKA, G.A., red.izd-va; KASIMOV, D.Ya., tekhn. red.

[Basic recommendations on the use of pressure pipes made of
low-density polyethylene (high pressure)] Osnovnye rekomendatsii
po primeneniui napornykh trub iz polietilena nizkoi plotnosti
(vysokogo davleniia). Moskva, Gos. izd-vo lit-ry po stroit.,
arkhit. i stroit. materialam, 1961. 63 p. (MIRA 15:4)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut sa-
nitarnoy tekhniki.
(Pipe, Plastic)

(Polyethylene)

KAGAN, D.F., kand. tekhn.nauk; VANYAKIN, D.M., kand. tekhn. nauk;
LOBACHEV, P.V., kand. tekhn. nauk; YEKHLAKOV, S.V., inzh.;
PAVLOV, L.D., inzh.; RUZIN, M.Ya., inzh.; ANDREYEVA, I.N.,
inzh.; SHMAKOVA, G.D., inzh. Primali uchastiye:
SAPOZHNIKOV, M.M., kand. tekhn. nauk; GEFDING, A.K., kand.
tekhn. nauk; MALINOVSKIY, R.B., inzh.; STRASHNYKH, V.P.,
red. izd-va; KASIMOV, D.Ya., tekhn. red.

[Instructions for designing, installing, operating, and
repairing interior water supply systems using vinyl plastic
pipes] Ukazaniia po proektirovaniu, montazhu, ekspluatatsii
i remontu vnutrennikh vodoprovodov iz viniplastovykh trub.
Moskva, Gos. izd-vo lit-ry po stroit., arkhitekt. i stroit. ma-
terialam, 1961. 91 p. (MIRA 15:2)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut sa-
nitarnoy tekhniki. 2. Nauchno-issledovatel'skiy institut sa-
nitarnoy tekhniki Akademii stroitel'stva i arkhitektury SSSR
(for Kagan, Vanyakin, Lobachev, Yekhlakov, Pavlov, Ruzin,
Andreyeva, Shmakova). 3. Leningradskiy nauchno-issledovatel'skiy
institut Akademii kommunal'nogo khozyaystva im. K.D.Pamfilova
(for Sapozhnikov). 4. Vsesoyuznyy nauchno-issledovatel'skiy in-
stitut gidrotekhnicheskikh i sanitarno-tekhnicheskikh rabot
(for Gefding). 5. Institut po proyektirovaniyu zhilishchno-
grazhdanskogo stroitel'stva v g. Moskve (for Malinovskiy).
(Water pipes)

SHEVELEV, F.A.; KAGAN, D.F.; VANYAKIN, D.M.

Use of pipes from high-pressure polyethylene. Vod. 1 san.
tekh. no.3:13-17 Mr '61. (MIRA 14:7)
(Pipe, Plastic) (Polyethylene)

SHEVELEV, F.A.; KAGAN, D.F.; YEZHAKOV, S.V.

Use of plastic pipes in rural construction. Vod. i san. tekhn.
no.6:18-24 Je '61. (MIRA 14:6)

(Water supply, Rural)
(Pipe, Plastic)
(Milk—Transportation)

NASONOV, V.N.; KOSHKIN, V.G., kand.tekhn.nauk; GUBENKO, A.B., doktor
tekhn.nauk; KAGAN, D.F., kand.tekhn.nauk

Plastics and synthetic resins in construction by M.I. Garbar,
I.V. Rastanin. Reviewed by V.N. Nasonov and others. Stroi.
mat. 7 no. 1:37 Ja '61. (MIRA 14:1)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury
SSSR (for Nasonov).

(Plastics) (Resins, Synthetic)

(Rastanin, I.V.)

(Garbar, M.I.)

SHEVELEV, F.A.; KAGAN, D.F.; YEKHLAKOV, S.V.; MIRONOV, A.A.

Analysis of procedures and types of joints of polythene tubes.
Sbor.trud.NIIST no.8:26-63 '61. (MIRA 15:5)
(Pipe, Plastic)

S/081/62/000/017/082/102
B177/B186

AUTHORS: Bokshitskiy, M. N., Kagan, D. F.

TITLE: Investigation of the strength of pipes composed of several thermoplastics under impact loading conditions

PERIODICAL: Referativnyy zhurnal: Khimiya, no. 17, 1962, 538, abstract 17P10 (Sb. tr. N.-i. in-t. sap. tekhn. Akad. str-va i arkhitekt. SSSR no. 8, 1961, 195 - 203)

TEXT: Existing test methods, particularly the *ISO* (ISO) method, are shown to be inadequate, and the authors call for the development of new and improved types of dynamic testing of plastic pipes. A new test method is proposed, using an ordinary pendulum drop-hammer of the Charpy type fitted with a specially designed pendulum. In devising the new method, the authors had in mind particularly the behavior of tubes damaged by tangential stresses with rapid build-up. A test method is described, stating the values obtained for the specific impact strength of pipes composed of various thermoplastics. [Abstracter's note: Complete translation.]

Card 1/1

S/191/62/000/002/003/008
B110/B101

AUTHORS: Bokshitskiy, M. N., Kagan, D. F., Klinov, I. Ya.
TITLE: Thermoplastic pressure piping. Communication I. Mechanical strength of pipes
PERIODICAL: Plasticheskiye massy, no. 2, 1962, 38 - 44

TEXT: In this paper, the mechanical strength of pipes under a static load is estimated. To determine the relations among time, tension, and temperature, the durability curves are divided into two linear sections: (a) a flat one and (b) a steep one separated by the point of inflection. In (a), plastic destruction occurs with uniform deformation of the whole specimen as long as the wall thickness remains unchanged. Swelling spreads radially and axially, and intensive orientation and fracture in the destruction zone occur at a right angle to the pipe axis. Deformation in highly elastic PE (especially high-pressure PE) is largely reversible. In (b), brittle destruction occurs due to cracking and partial, highly elastic deformation. $\tau = B \cdot \exp[(U_0 - \gamma)/kT]$ is valid with U_0 being the

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Thermoplastic pressure piping...

S/191/62/000/002/003/008
B110/B101

energy constant of destruction dependent on the material properties (in metals it corresponds to the sublimation energy), γ being a structure-sensitive constant depending on orientation, working methods, etc., and B being a constant dependent on temperature and stress. The coordinates of the "brittle point" are: $x_h = (b_h - b_p)/(k_p - k_h)$; $y_h = (k_p b_h - k_h b_p)/(k_p - k_h)$, where b_p and b_h are the strengths in plastic and brittle destruction at T_i , k_p and k_h are the temperature-dependent constants. $\sigma_h = B \tau_h^n$ with B being C'/C_1^n and $n = \lambda'/\lambda$ is derived for the instantaneous strength in brittle destruction which thus depends only on stress. Plastic destruction occurs with $\sigma > \sigma_h$, and brittle destruction in praxis occurs at $\sigma < \sigma_h$. The boundary values of stress and durability which correspond to the brittle transition, are determined from

$$\tau_h = C \cdot e^{-\lambda \cdot T_i}$$

Card 2/4

$$C = \left(\frac{A_h}{A_p} \right)^{\frac{1}{k_p - k_h}} \quad \text{и} \quad \lambda = \frac{\sigma_p - \sigma_h}{k_p - k_h}$$

(8) and

Thermoplastic pressure piping...

S/191/62/000/002/003/008
B110/B101

$$\sigma_h = C' \cdot e^{-\lambda t}$$

$$C' = \left(\frac{A_p^{\lambda_p}}{A_h^{\lambda_h}} \right)^{\frac{1}{\lambda_p - \lambda_h}} \quad \text{or} \quad \lambda = \frac{\lambda_h \sigma_p - \lambda_p \sigma_h}{\sigma_p - \sigma_h} \quad (9).$$

$A_p, \alpha_p, A_h, \alpha_h$ are constants depending on the loading rate. The time dependence of strength $\sigma = A \tau^{-n} \cdot e^{-\alpha \tau}$ with A, n , and α being empirical constants, also holds for PE pipes with constant, linear characteristics. The authors (Author's Certificate no. 130225 of September 3, 1959, Vestnik tekhniko-ekonom. inform. NIITEKhIM, no. 5, 14 (1960)) studied Soviet PVC, high-pressure PE-500 (LE-500) PE (of the Okhtinskiy khimicheskii kombinat (Okhta Chemical Combine)) and low-pressure PE (of the NIIPM) by the pin and cone methods. In relaxation tests, only brittle fracture was observed independent of deformation. It usually started on the external surface at a right angle to the stress direction, with a parabolic destruction front. The velocity of the "avalanche crack" increases linearly with time. High-pressure PE is sensitive to

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Thermoplastic pressure piping...

S/191/62/000/002/003/008
B110/B101

stress concentrators. The initial embryonic crack has a smooth surface characteristic of brittle fractures. On further propagation of the "avalanche crack" from the point of stress concentration, the fracture surface becomes rough due to retarding elasticity. Low-pressure PE usually breaks in the center section with a smooth surface; its durability is lower than that of high-pressure PE. A 1.5 - 2% deformation is assumed to be comparatively safe. Ring-shaped PVC microsamples of the Vladimirskiy khimicheskiy zavod (Vladimir Chemical Plant) were examined in various media at 20 - 80°C. A steep initial drop in stress is characteristic of PE relaxation curves. The propagation velocity of the "avalanche crack" increases with time and temperature up to 40 - 45°C. At 55 - 60°C, however, high elasticity predominates. A temperature rise from 20°C to 100°C reduces the strength of high-pressure PE to 1/9; the strength of low-pressure PE is reduced by 50% due to a temperature rise from 20°C to 60°C. There are 9 figures and 17 references: 11 Soviet and 6 non-Soviet. The three references to English-language publications read as follows: L. F. Sansone, SPE Journal, No. 5, 418 (1959); ASTM-Bulletin, No. 12, 25 (1956); A. A. Griffith, Phil. Trans. Roy. Soc., 221, 163 (1921).

Card 4/4

BOKSHITSKIY, M.N.; KAGAN, D.F.; KLINOV, I.Ya.

Delivery conduits made of thermoplastics. Estimation of strength.
Plast.massy no.3:38-44 '62. (MIRA 15:4)
(Pipe, Plastic)

KAGAN, D.F.; YEKHALKOV, S.V.

Investigation of glued joints of vinyl tubes. Sbor.trud.MIIST
no.8:64-81 '61. (MIRA 1535)
(Pipe, Plastic)

KAGAN, D.F.; DUBROVKIN, S.D.

Investigation of temperature deformations of vinyl sewer pipes
in apartment houses. Sbor.trud.NIIST no.8:32-101 '61.

(MIRA 15:5)

(Pipe, Plastic) (Sewer pipe)

KAGAN, D.F.; KOCHNOV, I.M.

Polypropylene and pipes made of it. Sbor.trud.MILST no.8:102-134
'61. (MIRA 15:5)

(Polypropylene) (Pipe, Plastic)

KAGAN, D.F.; BOKSHITSKIY, M.N.

Investigation of the strength of thermoplastic pipes under
continuous load. Sbor.trud.NIIST no.8:135-194 '61. (MIRA 15:5)
(Pipe, Plastic) (Thermoplastics)

BOKSHITSKIY, M.N.; KAGAN, D.F.

Investigation of the strength of some thermoplastic tubes under
impact load. Shor.trud.NIIST no.8:195-203 '61. (MIRA 15:5)
(Pipe, Plastic) (Thermoplastics)

KAGAN, D.F.; BOKSHITSKIY, M.N.; DUBROVKIN, S.D.

Study of the fastening elements of interior plastic piping. Sbor.
trud. NIIST no.12:66-83 '62. (MIRA 16:3)
(Pipe fittings) (Pipe, Plastic)

KAGAN, D.F.; SHAPIRO, G.I.; BYKHOV, V.N.

Expanding the uses of plastic pipe, Sbor. trud. NIIST no.12;
92-100 '62. (MIRA 16:3)
(Pipe, Plastic)

KAGAN, D.F.; GUSEV, G.G.; SINKEVICH, K.V.

Analysis of the elements of joints of steel pipe lined with vinyl
plastics and polyethylene. Sbor. trud. NIIST no.12:101-116 '62.
(MIRA 16:3)

(Pipe joints) (Pipe, Steel) (Plastics)

KAGAN, D.F., kand.tekhn.nauk

Temporary mechanical strength of polyethylene pipe subject to static
loading. Vod. i san. tekhn. no.5:1-5 My '63. (MIRA 16:6)
(Pipe, Plastic—Testing)

KAGAN, D.F., kand.tekhn.nauk; BOKSHITSKIY, M.N., kand.tekhn.nauk

Analysis of ways of using thermoplastic pipes in hot-water supply
systems. Vod. i san. tekhn. no.5:9-14 My '63. (MIRA 16:6)
(Pipe, Plastic) (Thermoplastics)

KAGAN, D.F.

[Properties and calculation of polyethylene pipes used in
water supply] Issledovanie svoistv i raschet polietilenovykh
trub, primeniamykh v vodosnabzhenii. Moskva, Stroiizdat,
1964. 222 p. (MIRA 17:5)

L 23574-65 EWT(m)/EWP(j) Pc-4 RM
AM4045246 BOOK EXPLOITATION

Kagan, Dmitriy Filippovich

Pipelines made of solid polyvinyl chloride (Truboprovody iz tvardogo polivinil-khlorda) Moscow, Izd-vo "Khimiya", 1964. 270 p. illus., bibliog. Errata slip inserted. 4000 copies printed. Editor: G. I. Shapiro; Technical editor: V. V. Kogan.

TOPIC TAGS: polyvinyl chloride, pipeline

PURPOSE AND COVERAGE: This book was intended for engineers, technicians, and research personnel engaged in the production of plastic pipe and pipeline fittings and the application of these fittings in laying pipe for different purposes. Basic data concerning the production and application of pipe and pipeline fittings made of solid polyvinyl chloride are generalized; methods of designing pipe for

signing, laying, and using pipelines made of solid polyvinyl chloride are outlined. Methods of testing the physical-mechanical properties of pipe are described, and recommendations are included concerning acceptance testing of pipeline fittings.

Card 1/2

KAGAN, D.F., kand. tekhn. nauk; DUBROVKIN, S.D., kand. tekhn. nauk;
GOL'TSMAN, Sh.L., inzh.

Laying plastic pipelines inside buildings. Vod. i sm. tekhn.
no.6:21-26 Ja '64 (MIRA 18:1)

SHAPIRO, G.I.; KAGAN, D.F.

Establishing efficient assortments of plastic pressure pipes.
Standartizatsiia 29 no.1.5-13 Ja '65. (MIRA 184)

L 60042-65 ENT(m)/EFF(c)/ENP(v)/ENP(j)/T Pc-4/Pr-4/Ps-4 70/3 J/2H
ACCESSION NR: AP5018044 UR/0191/65/000/007/0000,0000
678.743.22-462.020.42.41.539.415

AUTHOR: Kagan, D. F.; Dubrovkin, S. D.; Gol'tsman, Sh. I.

TITLE: Bonded joints of pipes of tough polyvinyl chloride and their shearing strength

SOURCE: Plasticheskiye massy, no. 7, 1965, 65-69

TOPIC TAGS: polyvinyl chloride pipe, plastic pipe joint, adhesive joint, shearing strength, adhesive, perchlorovinyl resin

ABSTRACT: Adhesives based on perchlorovinyl resin and on polyvinyl chloride itself are widely used for joining polyvinyl chloride pipes. In the present work, the effect of adhesive composition on the strength of joints for various gaps between the pipes

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L 60042-65

ACCESSION NR: AP6018044

joint is presented, and a brief review is given of related calculations already reported in the literature. Orig. art. has: 5 figures and 28 formulas.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: RT, 115

NO. OF PAGES: 1

OTHER: 00

Card 2/2

KAGAN, D.F., kand. tekhn. nauk

Durability of pipes from thermoplastic materials. Vol. 1, part 1.
tekhn. no.9:30-35 S '65. (MIRA 18:9)

SHEVELEV, F.A.; KAGAN, D.G.; LOBACHEV, P.V.

Use of vinyl plastic rising pipes in water-supply systems. Vod.
1 san.tekh. no.1:11-16 Ja '59. (MIRA 12:1)
(Water pipes) (Vinyl polymers)

RACHOK, V.V.: YAGAN, D.O.

Simplifying the adjustment of machine tools. Mashinostroitel'
no.11:11 N '61. (MIRA 14:11)
(Orshansk--Machine-shop practice)

KAGAN, David Il'ich, 1893—

Lead Poisoning Moskva, Voprosy truda, 1926. 62p. (54-54657)

RA1231.L4K3

Kagan, D. I.

Gurevich, I. M., Kagan, P. I. and Kagan, D. I.---"Effect of preliminary specific and non-specific immunotherapy on the frequency of occurrence of sulfurrestisting gonorrhea in men," Nauch. zapiski Gor'k. in-ta dermátologii i venerologii i Kafedry kozhnoverenich. bolezney GGM, im. Kireva, Issue 12, 1948, p. 253-57

SO: U-3264, 10 April 1953, (Latvian 'Zhurnal 'nykh Statey, No. 3, 1949)

YAGAN, I. I.

Kagan, I. I., Yagan, I. I. and Guravich, I. M. "On the problem of the
cure of gonorrhea in men," Nauch. zhurnal Ger'k. in-ta d'rmankopii i
venereologii i Psichry Zhenskovo-ver nish. Belorussk. Virovi, Issue 12, 1948,
p. 287-92

SC: U-3264, 10 April 1953, (Litozis 'zhurnal 'neph. Stary, No. 2, 1949)

GROZOVSKIY, T.S.; DONSKOY, D.I.; KAGAN, D.Kh.; ISAYEV, I.P., inzhener, redaktor; EYFEL', A.I., inzhener, redaktor katalogov i plakatov; MATVEYEVA, Ye.N., tekhnicheskiy redaktor; MODEL', B.I., tekhnicheskiy redaktor.

[Repairable and spare parts for the ZIS-150 automobile; album of design] Remontiruemye i dopolnitel'no-remontnye detali avtomobilov ZIS-150; al'bom chertezhei. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1951. 137 p. (MLRA 8:1)
(Automobiles--Apparatus and supplies)

ZEMLYANOV, M. G.; KAGAN, D. M.; CHERNOPOLEKOV, N. A.; CHETSERIN, A. G.

"The study of the phonon spectrum and dispersion curves in vanadium"

Paper to be presented at the International Atomic Energy Agency
(IAEA) - Symposium on Inelastic Scattering of Neutrons in Solids
and Liquids - Chalk River, Canada, 10-14 Sept. 1962

KAGAN, D.Ya.; ROVINSKAYA, S.A.

Differential diagnosis of vascular and tumoral diseases of the brain
in aged patients. Vrach. delo no.6:152 Je '61. (MLA 15:1)

1. Nevrologicheskoye otdeleniye Odesskoy gorodskoy klinicheskoy
bol'nitsy. (BRAIN_DISEASES) (AGED_DISEASES)

KAGAN, D.Ye., kand.med.nauk; KVITKO, G.A.

Excretion of adrenaline and adrenalinelike substances in patients
with coronary insufficiency. Terap.arkh. 33 no.4:71-74 '61.
(MIRA 14:5)

1. Iz Ukrainського tsentral'nogo nauchno-issledovatel'skogo insti-
tuta ekspertizy trudosposobnosti i organisatsii truda invalidov.
(CORONARY HEART DISEASE) (ADRENALINE)

KAGAN, V. Y.

CA

Removal of dissolved oxygen from water by chemical means. 1. V. Ya. Kagan. *Izvestiya Akad. Nauk SSSR, Khim. Razrab. 2*, No. 3, 101-2 (1969). The object of the exp'ts. was the removal of O from water to prevent corrosion of boilers. The method is based on the oxidation of Na_2SO_3 to Na_2SO_4 . The exp'd. equipment and the methods of the exp'ts. are described. With an equiv. amt. of Na_2SO_3 the velocity of the reaction depends on the temp. (at 100°C it is 0.7 min⁻¹; at 80-100°C 1-2 min⁻¹). Increase of the amt. of Na_2SO_3 increases the velocity of the reaction (with a 70% excess the reaction is complete in 2 min. at all temps.). The amt. of the dry residue of water (up to 100 mg. l⁻¹) has no effect on the process, but is injurious to straight-run boilers. To avoid a large excess of Na_2SO_3 (which increases the amt. of the dry residue), part of the O is removed by heating before treatment with Na_2SO_3 . Admixts. of org. substances decrease the velocity of the reaction (up to 80%) and a larger excess of Na_2SO_3 is required. Inorg. salts (1% of Fe salts or 0.001% of Cu salts) act as catalysts. Therefore, it is advisable to use tech. Na_2SO_3 (OS14511). Na_2SO_3 is added directly to the vessel or to the water. At a high temp. the process is complete in a short time without excess of Na_2SO_3 . Curves show the dependence of the reaction velocity on temp. and on concn. of Na_2SO_3 . W. R. Henn

AS 55.5.4 METALLURGICAL LITERATURE CLASSIFICATION

KASAN, D. Y.

F

M

407. OTHER CORROSION WITH RELATED ACID FILTHING. (Kasap, Y.,
121 Eksp. Topliva (Fuel Econ.), Aug. 1991, 28, 29). Despite the use of
so-called corrosion inhibitors, corrosion eventually occurs in boiler tubes
repeatedly cleaned with acid. The results of tests carried out on
boiler tubes which were subjected to several washings with hydrochloric
acid over a period of years are described. (L).

KAGAN, D. Ya.

USSR

✓ Determination of hydrogen in steam. D. Ya. Kagan and
L. S. Zauravlov. *Chem. Standard* 25, No. 4, 488 (1974).
The condensate is heated to expel the gas which is col-
lected over water. The H is determined by combustion.

10. 2. Standard

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619910010-4

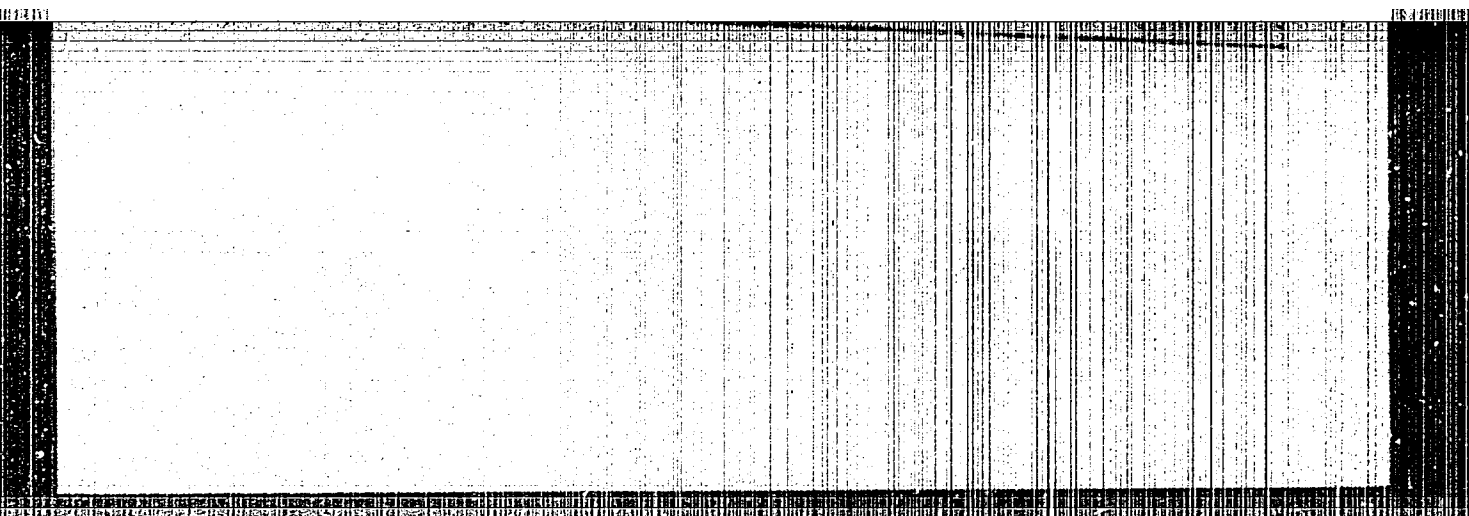
KAGAN, D. Ya.

APPROVED FOR RELEASE: 08/10/2001

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APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619910010-4"

KAGAN, D.Y.

AID P - 1944

Subject : USSR/Engineering

Card 1/1 Pub. 29 - 24/31

Author : Kagan, D. Ya., Kand. of Tech. Sci.

Title : Measures of control and of prevention of industrial boiler damage resulting from intercrystalline corrosion

Periodical : Energetik, 3, 30-33, Mr 1955

Abstract : The author describes the causes of boiler caustic embrittlement and corrosion fatigue resulting from nonuniform corrosion, chemical attack and repeated stresses on metal parts. He describes details of a so-called brittleness indicator and ways of using it to test the degree of corrosion. Finally, he describes methods of zeolite water treatment. Five drawings.

Institution: None

Submitted : No date

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SOV/112-59-3-4487

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 3, p 30 (USSR)

AUTHOR: Kagan, D. Ya.

TITLE: Corrosion of High-Pressure Boilers and Methods for Controlling It
(Korroziya kotlov vysokogo davleniya i metody bor'by s ney)

PERIODICAL: V sb.: Vnutrikotlovyye fiz.-khim. protsessy, vodopodgotovka i
vodn. rezhimy kotlov na elektrost. vysokikh i sverkhvysokikh parametrov.
M., AS USSR, 1957, pp 339-347

ABSTRACT: Welding^{-seam} failures in the tubes of water-type economizers[^] are due to unsatisfactory quality of welding and to abrupt temperature fluctuations. Laminations of steam-water mixture at low stream speeds are responsible for steam-water corrosion of outlet sections of boiling-type economizers. Corrosion of steaming tubes is due to evaporation of boiler water almost to dryness with heating surfaces fouled with sludge, to unsatisfactory water regulation, etc. Processes of alkaline metal corrosion occur, as well as the

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SOV/112-59-3-4487

Corrosion of High-Pressure Boilers and Methods for Controlling It

should not be higher than 20%. Besides, measures against sludge accumulation on heating surfaces should be taken by preventing corrosion in the feed-water section and by ensuring tightness of turbine condensers.

A. P. M.

Card 3/3

8(6)

SOV/112-59-2-2518

Translation from: Referativnyy zhurnal. Elektrotehnika, 1959, Nr 2,
pp 34-35 (USSR)

AUTHOR: Kagan, D. Ya.

TITLE: Corrosion of Welding Seams and Strain-Hardened Metal Due to Numerous
Acid Cleanings (Korroziya svarnykh shvov i naklepannogo metalla pri
mnogokratnykh kislotnykh promyvkakh)

PERIODICAL: V sb.: Vnutrikotlovyye fiz.-khim. protsessy, vodopodgotovka i vodn.
rezhimy kotlov na elektrost. vysokikh i sverkhvysokikh parametrov. AS USSR,
1957, pp 417-422

ABSTRACT: Corrosion of strain-hardened samples and carbon-steel welding seams
treated with HCl solutions (5-10%), with and without addition of PB-5 inhibitor,
at temperatures of 20, 40, 60, 80, and 100°C, was investigated. With higher
temperatures, the corrosion-inhibiting action is reduced; the corrosion rate of
strain-hardened metal is higher than that of nonhardened (usually by 100-200%.

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SOV/112-59-2-2518

Corrosion of Welding Seams and Strain-Hardened Metal Due to Numerous Acid

sometimes by 300 and 800%). Experiments showed a much higher corrosion rate for samples with welding seams. Higher temperatures of HCl solution without PB-5, apart from general intensification of corrosion, cause local deep etching of the addition material; at 80-100°C, through etchings are formed in butt welds. The corrosion inhibitor protects the welding seam against acid less than it protects the base metal; with higher temperatures, the inhibition becomes less effective for the welding seam than for the base metal. Experiments showed that at 80-100°C, the corrosion was localized at the butt root and in the addition material. It is recommended that acid cleaning be conducted at HCl concentrations not higher than 5-6% and at PB-5 or PB-6 concentrations not lower than 2 g/liter and at a temperature not over 60-70°C. Results of the above investigations were verified on an industrial boiler (25 atm, 20 ton/hr). Six acid cleanings were conducted under the above conditions; samples were tested for 7,248 hours — 2,544 hours under operating

Card 2/3

AUTHOR: ^{KAGAN, D. YA.}
Akol'zin P.A., Candidate of Technical Sciences, Kagan, D.Ya.,
Candidate of Technical Sciences and Kot A.A., Candidate of
Technical Sciences (All-Union Thermo-technical Institute,
V.T.I.)

TITLE: Concerning alkali-safe conditions of boiler water. (O shchel-
ochnobezopasnykh rezhimakh kotlovoy vody).

PERIODICAL: "Teploenergetika" (Thermal Power), Vol. 4, No. 6, 1957
pp. 32 - 35 (U.S.S.R.)

ABSTRACT: The main cause of inter-crystallite corrosion of the metal
of boiler drums is the aggressive action on stressed metal
of boiler water concentrate. Damage is promoted by the pres-
ence in the boiler water of corrosive alkali, the concentrat-
ion of which may reach dangerous values because of local
evaporation of water. At temperatures above 300 °C, which
are usually found in high pressure steam boilers, signs of
inter-crystallite corrosion appear with a 5% solution of
caustic soda.

The most acceptable condition of boiler water which ensures
the absence of inter-crystallite corrosion in high and super-
high pressure boilers is to maintain in them zero hydrate
i.e. purely phosphate alkalinity. This is achieved by intro-
ducing into the boiler water various phosphate salts of
sodium. The absence of an accumulation of caustic soda in
evaporating water containing purely phosphate alkalinity and

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Concerning alkali-safe conditions of boiler water. (Cont.)

also the ability of sodium phosphate to passivate steel make the zero-hydrate-alkaline condition a reliable means of preventing inter-crystallite corrosion. However, in practice certain aspects of this practice require to be cleared up.

The maximum alkalinity can be determined on the assumption that all of the alkalinity is due to the presence of the most alkaline compound $\text{-Na}_3\text{PO}_4$. The lower limit is set by the condition of preventing scale-formation and general corrosion, for which it is usually taken that the alkalinity titrated against phenol-phthalein is equal to 9 mg/l (pH approx.10).

A graph is plotted showing the change in the upper limit of the alkali number of boiler water under given conditions as a function of the concentration of FO_4^{3-} . A graph is plotted of the ratio of the alkalinity to phenol-phthalein to that to methyl-orange of boiler water from the salty section against the value of this ratio in the clean section, with a boiler pressure of 110 atm. In practice a purely phosphate alkalinity can only be maintained in condensing power stations, the boilers of which are supplied with high quality condensate with make-up from distillate from evaporators or de-salted water. A graph is plotted of the quantity of caustic soda formed in the salty sections of boilers with different hardnesses caused by the presence of calcium and magnesium bicarbonates in the feed water. The data shows that the concentration of caustic soda in the

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Concerning alkali-safe conditions of boiler water. (Cont.)

salty sections increases with increase in hardness of the feed water. A table is given showing the amount of sodium phosphate which should be added to the feed water for various degrees of hardness of the water. Tests have established that if the excess hydrate alkalinity reckoned as caustic soda is 15 to 20% of the sodium sulphate content of the boiler water the water will be safe in respect of inter-crystallite corrosion. It is also shown that sulphate in a mixture with an equal quantity of chloride, if their total content is 15 to 20% of the hydrate alkalinity, can also prevent the formation of inter-crystallite corrosion. The presence in the boiler water of chloride is useful in preventing general alkaline corrosion.

It is concluded that the condition of pure phosphate alkalinity of boiler water in boilers without stepwise evaporation is maintained (on the basis of the index given in the article), according to the maximum content of excess concentration of phosphates being not above 40 mg/l reckoned as PO_4^{3-}

and a minimum alkaline number of about 9 mg/l NaOH. Control over the condition of purely phosphate alkalinity of boilers with stepwise evaporation is effected by analysis of the boiler water from the last stage of evaporation. The maximum concentration of excess phosphates in this stage should be of

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Concerning alkali-safe conditions of boiler water. (Cont.)

the order of 100 mg/l reckoned as PO_4^{3-} and the minimum concentration of phosphates in the water of the clean section should be of the order of 5 to 7 mg/l reckoned as PO_4^{3-} and it is essential that the boiler water should be alkaline to phenolphthalein.

The conditions which ensure purely phosphate alkalinity are the absence of excessive intakes of raw water into the turbine condensers and high quality of distillate from the evaporators. If the boiler is fed with purified water this condition can hardly be achieved. If it is necessary to reduce the amount of silicic acid carried over, the sulphate-alkali boiler water condition is recommended, which makes it possible to ensure safe operation of the boilers even when fed with purified water. 6 figures, 5 literature references (4 Russian).

AVAILABLE:

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644

The influence of the medium on the corrosion stability of austenitic steels after plastic deformation. (Cont.)

action of mechanical stress and a corrosive medium, in such cases the steel may crack after only a few minutes, or it may take years. In condensate, which is very slightly corrosive, corrosion should not occur below the yield point, but a strongly corrosive medium can cause damage at quite low stress. This effect seems to be observed in all austenitic steels, but it also depends on the metal structure, and so on its composition, heat treatment, etc. At the high temperatures met in boilers caustic soda is particularly dangerous.

The influence of the medium on the tendency for cracks to form in austenitic steel was tested on samples with remanent strains of 15% and 30%. The upper limit was related to design features in the superheaters of the Cherepetsk power station. The work was done in autoclaves at a pressure of 300 atm. The specimens were subject only to internal stresses caused by bending. Nitrogen blowing was used to remove air from the autoclave. The tests were carried out in solutions of NaOH at concentrations from 100 to 50 000 mg/l; mixtures of NaOH and Na_2SO_4 in the ratio of 1:5 at 60 000 mg/l; of Na_3PO_4 at 50 000 mg/l, of NaCl at 50 000 mg/l and in condensate with a salt content of 0.2 mg/l. The experiments were carried out at temperatures of 380 and 550 °C.

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The influence of the medium on the corrosion stability of austenitic steels after plastic deformation. (Cont.)

The composition of the steels tested was as follows:

Steel elements	3A-1T	1A-1	3A-405	3A-257	3A-257T	3A-694	3A-694	3A-695
C	0.12	0.16	0.12	0.10-0.10	0.10	0.10	0.09	0.10
Si	0.8	0.55	0.80	0.40-0.50	0.46	0.21	0.52	0.14
Mn	2.0	0.7	1.0	0.32-0.38	0.45	1.34	1.40	1.41
S	0.030	0.020	0.025	-	0.010	0.016	0.020	0.021
P	0.035	0.025	0.030	-	0.021	0.020	0.012	0.017
Cr	17.0 - 20.0	14 - 16	16.0 - 17.0	14.60	15.48	13.19	15.0	13.9
Ni	8.0 - 11.0	14 - 16	12.5 - 14.5	14.02	15.25	13.8	15.0	17.0
W	-	0.8 - 1.2	-	2.27	2.32	2.15	-	-
Mo	-	1.8 - 2.2	2.0 - 2.5	0.45	0.50	0.52	-	-
Nb	-	-	0.95 - 1.25	-	-	-	0.50	1.05
Ti	Up to 0.8	0.15-0.35	-	-	-	0.45	-	-
Co	-	2.8 - 3.2	-	-	-	-	-	-

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The influence of the medium on the corrosion stability of austenitic steels after plastic deformation. (Cont.)

For steel 3M-257 the first figure relates to steel in the Heat and Electric Power Station of the All-Union Thermo-technical Institute and the second figure to steel in the Cherepetsk power station. The first figure for steel 3M-694 relates to an experimental melt and the second to regular production.

In preparing for test the samples with remanent strains of 15% and 30% only specimens of steels 3A-IT, 3M-257 and 3M-257T withstood 30% strain; the other specimens cracked.

The results of the tests are tabulated and photo-micrographs of cracks are given. The results show the influence of time and temperature on crack formation. The most active medium was NaOH at a concentration of 50 000 mg/l, in which cracks formed in steel 3M-257 after 200 to 500 hrs. In NaOH at 10 000 mg/l cracks formed in almost all the steels tested at temperatures of 380 - 550 °C after 1 500 to 2 000 hrs. The exception was steel 3A-IT, not one specimen of which was damaged.

Weaker solutions of NaOH (100 and 1 000 mg/l) did not affect any of the samples of steels 3M-257 and 3A-IT. NaOH at 10 000 mg/l plus Na₂SO₄ at temperatures of 380 and 550 °C produced cracking except in steels 3A-IT and 3M-405. Sodium phosphate at both temperatures attacked steels 3M-257, 3M-257T, 3M-695 and 1A-1. In samples with high strain, phosphate caused cracking after 2 000 hrs and with lower strain, after 3 380 hrs. In pure condensate at both temperatures, in the

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The influence of the medium on the corrosion stability of austenitic steels after plastic deformation. (Cont.)

absence of oxygen, no cracks occurred in any specimen. NaCl did not affect steels 3M-257, 3M-694 nor 3A-IT.

The cracks usually occurred in the side of the specimen under tension, but sometimes were found in the side under compression. The various kinds of damage produced are described.

The investigations should continue, to elucidate further the influence of the time factor at temperatures of 400 to 600 °C in the absence of oxygen.

It is concluded, from the experimental results, that the majority of austenitic steels suitable for the manufacture of superheaters, steam piping or turbine parts for super-high steam conditions, whether stabilised with carbide forming additives or not, are sensitive to alkali contact at high temperatures. Alkalies may be present in boiler water. Therefore, high steam purity is of great importance, not only from the standpoint of deposit formation, but also because of its effect on the reliability of the metal.

5 figures, 4 literature references (1 Russian).

AVAILABLE:

Card 5/5

104-3-9/45

AUTHOR: Kagan, D.Ya., Candidate of Technical Sciences,

TITLE: The influence of various acids on inter-crystallite destruction of steel ЭИ-257 (Vliyaniye razlichnykh kislot na mezhkristallitnoye razrusheniye stali EI-257)

PERIODICAL: "Elektricheskiye Stantsii" (Power Stations), 1957, Vol. 28, No.3, pp. 27 - 28 (U.S.S.R.)

ABSTRACT: In boilers for high temperatures and pressures the convection stage of the superheater is partially made of high alloy austenitic steel brand ЭИ-257 which contains no stabilising additives and which under certain conditions is subject to intercrystallite destruction. Water insoluble deposits sometimes form inside high pressure boilers particularly of the direct flow type and acids may be used to dissolve them, A solution of hydrochloric acid can remove almost any deposits from the heating surface. Phosphoric acid is not so good, chromic acid removes calcium deposits well and hardly touches deposits consisting mainly of iron oxide. Tests were made on these acids to remove deposits from the pipes of the experimental high pressure direct flow boiler at the All-Union Thermo-Technical Institute (Vsesnoyuzniy Teplo tekhnicheskii Institut). The deposits in the tubes consisted mainly of compounds of calcium (30%) and oxides of iron. The acids tried

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104-3-9/45

The influence of various acids on inter-crystallite destruction of steel ~~34~~-257. (Cont.)

practically no influence on any crystallite corrosion. Hydrochloric acid solutions caused the greatest intercrystallite destruction of steel ~~34~~-257 but it is the most effective in removing deposits and therefore a shorter contact time may be used and this acid may therefore only be used to clean deposits from high pressure boilers under emergency conditions. The aim should be to prevent the formation of deposits to achieve which the condensers should be well sealed. Carbon dioxide should be absent from the system, auxiliary equipment should be protected from corrosion when not operating and corrosion products should be carefully washed out after the auxiliary equipment has stood for a long time. There are 5 figures.

AVAILABLE: Library of Congress

Card 3/3

AUTHOR: Kagan, D.Ya. 91-58-5-29/35

TITLE: On Methods for the Removal of Carbonate Scale in Boilers
(O sposobakh udaleniya karbonatnoy nakipi v kotlakh)

PERIODICAL: Energetik, 1958,⁶ Nr 5, p 36 (USSR)

ABSTRACT: The removal of boiler scale is most effectively carried out by boiling 1 - 2% solution of sodium phosphate for 15 - 20 hours. The calcium phosphate formed in the process must be removed immediately to avoid hardening. The formation of boiler scale may be prevented by the phosphating of the boiler water in a ratio of 8 - 10 mg/l PO_4^{-3} .

AVAILABLE: Library of Congress

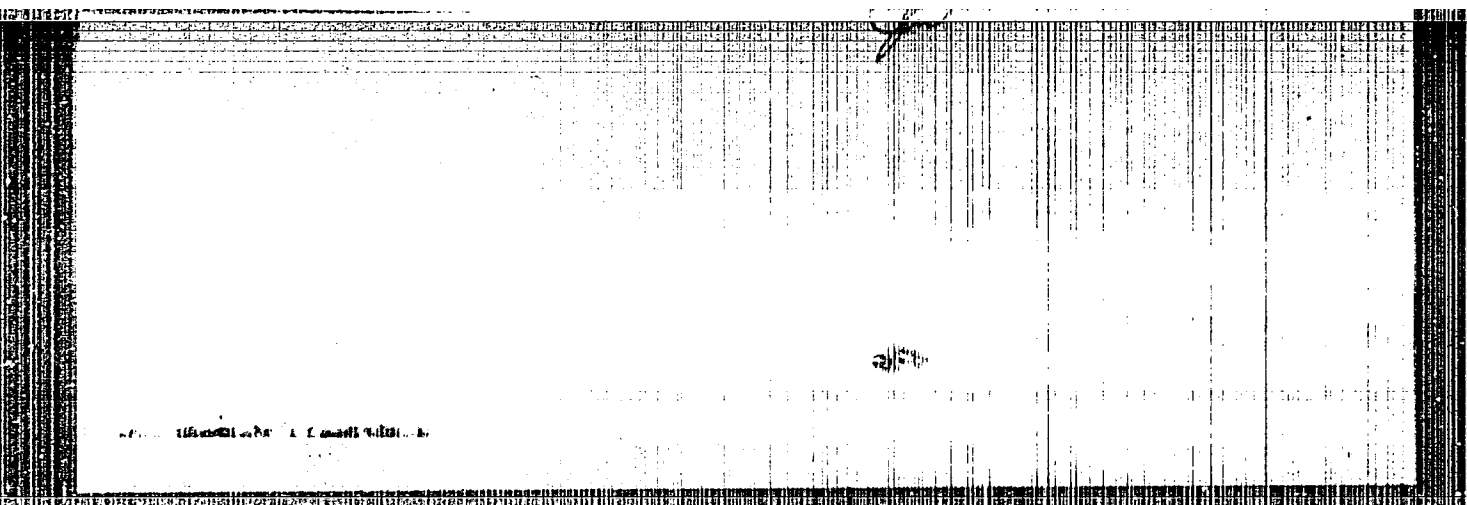
Card 1/1 1. Boilers - Maintenance

The respondents of this questionnaire were under the supervision of Dr. J. J. Ferguson and Dr. W. E. Bingham, and

operation is a more difficult one and the same holds true for the probability of corrosion is still more enhanced, if H₂S, NH₃, and air are present upon the tubes simultaneously. Certain steels are recommended (Stylen cold-chamber-treated) which shall be used as construction material instead of brass for the tubes in which such simultaneous action can be foreseen, but even this is object not necessary, as corrosion (construction will insure that H₂S cannot collect where NH₃ + H₂O will act injuriously on the tubes. Writer Jacobson

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5(3)

SOV/91-59-7-18/21

AUTHOR: Kagan, D. Ya.

TITLE: Determining the Oxygen Content of Feed Water

PERIODICAL: Energetik, 1959, Nr 7, p 37 (USSR)

ABSTRACT: For determining the O_2 content in feed water, T.A. Moiseyeva wants to know the dependency existing between the oxygen content and the temperature of the sample. The author states that the temperature of the sample has a strong influence on the analysis results when using the Winkler method for oxygen determination. He suggests cooling of the feed water sample to a temperature of $15 - 20^\circ C$, regardless to the analysis method. At temperatures of $20-30^\circ C$, the accuracy of determining oxygen is approximately $0.02 - 0.03$ milligram/liter

Card 1/1

KAGAN, D.Ya., kand. tekhn.nauk; SHVARTS, A.L., kand. tekhn. nauk

Damage of the heating surfaces of uniflow boilers equipped with
vertical water walls. Elek. sta. 30 no.3:16-19 Mr '59.

(MIRA 12:5)

(Boilers)

8 (6)

SOV/91-59-11-4/27

AUTHORS: Gurvich, S.M., Engineer, Kagan, D.Ya., Candidate of Technical Sciences, and Mamet, A.P., Doctor of Technical Sciences

TITLE: Causes of Boiler Corrosion

PERIODICAL: Energetik, 1959, Nr 11, pp 10-13 (USSR)

ABSTRACT: The authors explain the possible causes of a case of boiler corrosion at an unidentified plant. The corrosion was detected in a DKV-10-13 boiler. It was caused by an interaction of several factors: large amounts of ammonium sulfate were added to boiler water in the feed tanks; the regeneration of ammonium-sodium-cationite filters was not performed properly; no deaeration of the boiler water; improper washing of the boiler with diluted acids. They state that it is very difficult to estimate the degree of the influence of the one or the other factor because of the lack of sufficiently detailed data. In their conclusions the authors give some general instructions for processing boiler water.

Card 1/1

[illegible]

S/104/60/000/010/001/003
5194/E255

AUTHORS: Zelenskiy, V. G., Engineer and Kagan, D. Ya.,
Candidate of Technical Sciences

TITLE: An Investigation of Erosive Wear of Metals

PERIODICAL: Elektricheskiye stantsii, 1960, No. 10, pp. 14-16

TEXT: Previous work on this subject has been described in
an article by V. G. Zelenskiy in Teploenergetika, 1959, No. 2.
The present tests were carried out on slots (channels) made up of
the materials, the upper part of the slot being made of the
material under test and the lower of steel 1X18H9T (1Kh18N9T). The
base fluid for the tests was condensate with a salt content of
0.1 mg/litre, to which various amounts of salt solution were added
by means of a plunger-type measuring pump. During the tests the
water was at a pressure of 150 kg/cm² and a temperature of 125 ±
10°C. The materials tested and results obtained will be found in
the table. ✓

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✓

An Investigation of Erosive Wear of Metals

Characteristics of chemical contents of water		Depth of wear of specimens microns/hour		
Salts contained in water	Concentration mg/l	Steel 20	Steel 40	Bronze AK-4-4 (AZh-9-4)
Deaerated condensate	Salt residue - to 0.1 mg/l O ₂ =0.02 mg/l	3.65	10.10	1.5
NaCl	12.7	4.20	8.30	1.1
	83.4	4.70	7.05	0.4
	111.4	4.35	8.60	0.8
NH ₃	2.1-2.4	2.70	6.10	1.2
	9.4	0.29	0.70	0.6
	12.8	1.05	2.55	1.8

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/cont.

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An Investigation of Erosive Wear of Metals

Continuation of Table

$(\text{NH}_4)_2\text{CO}_3$	5 6	2.40 1.85	8.20 7.70	1.0 1.2
NaOH	3 60	2.95 0.70	0.63 0.65	0.2 1.2
CO_2	1.4	11.90	22.30	4.1
O_2	0.1 1.0	0.67 0.0	3.35 --	2.5 0.0

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An Investigation of Erosive Wear of Metals

Most of the tests lasted seven hours. In addition tests were made with carbon dioxide in the water, using stainless steel specimens of grades 1Kh18N9T, 3X13 (3Kh13), 3H-481 (EI-481) and weld metal from an electrode grade УН-6 (TsN-6). For purposes of comparison, tests were also made with the condensate in which the carbon steels and bronze had been tested. Four tests were made with solutions of ammonia at mean concentrations ranging from 2.1 to 12 mg/litre. There was a marked reduction in wear of the specimens as the ammonia concentration was increased up to 9 mg/litre, presumably because the pH value of the water was raised. Increasing the ammonia concentration from 9 to 12.8 mg/litre somewhat increased the wear of steel specimens and greatly increased it for bronze. Previous work has shown that ammonia treatment of feed water in high-pressure power stations provides reliable protection against carbon dioxide corrosion of steel and the present work indicates that it also provides effective protection of carbon steel parts against erosive wear. Tests that were made with oxygen in solution in the condensate showed that under the present test conditions

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An Investigation of Erosive Wear of Metals

using carbon steel oxygen commences to have an inhibiting effect above a concentration of 0.08 mg/litre. With bronze, however, this concentration of oxygen still promotes wear, mainly because protective films of copper are of low strength and stability when a small quantity of oxygen is present. For bronze the oxygen becomes an inhibitor at higher concentrations and at 1.0 mg/litre there were no signs of wear either on steel 20 or on bronze. Wear of steels 20 and 40 and bronze was heaviest when carbon dioxide was present in the condensate; for example, with 1.4 mg/litre of CO₂ in the condensate the wear of the materials was 11.9, 22.3 and 4.1 microns per hour respectively. This is apparently because in the presence of CO₂ the oxide films that form on the metal are unstable. Because the influence of CO₂ on erosive wear was found to be so high, tests were made with the stainless steels 1Kh18N9T, 3Kh13, EI-481 and weld metal of electrode TK-4 (TK-4) (UH-6 (TsN-6)). With these materials wear was small and did not exceed the values for pure condensate. Hence there is reason to suppose that with stainless steels erosive wear is less influenced

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An Investigation of Erosive Wear of Metals

by the quality of the feed water than is the case for carbon steels and bronze. It is concluded that the process of electro-chemical corrosion must play a decisive part in the erosive wear of metals. Erosive wear in power stations can be reduced by ammonia treatment of the feed water, which also provides general protection against corrosion. Since the water conditions at power stations are mainly governed by the requirements of the turbines and boilers the best way of improving the performance of parts exposed to the feed water is by good design and the use of erosion-resistant materials. There are 1 figure, 1 table and 4 Soviet references.

Card 6/6

KAGAN, D.Ya., kand.tekhn.nauk; ZHURAVLEV, I.S., inzh.

Corrosion of steam boiler pipes in conditions of temperature
variation. Teploenergetika 7 no.2:60-66 F '60.
(MIRA 13:5)

1. Vsesoyuznyy teplotekhnicheskiiy institut.
(Boilers---Corrosion)

KAGAN, D.Ya., kand. tekhn. nauk; KAGANER, T.A., inzh.

Hydrazine treatment of feed water for TP-250-1 extra-high pressure
boilers. Teploenergetika 7 no.11:46-48 II '60. (MIRA 14:9)

1. Vsesoyuznyy teplotekhnicheskiiy institut.
(Feed water purification) (Hydrazine)

S/096/61/000/003/005/012

E19⁵/E155

AUTHORS: Kagan, D. Ya., Candidate of Technical Sciences and
Zhuravlev, L.S., Engineer

TITLE: An Investigation of the Action of Contaminated Low-
Temperature Steam on Steels 35XHM (35KhNM) and
1X18H9T (1Kh18N9T) in a Stressed Condition

PERIODICAL: Teploenergetika, 1961, No. 3, pp. 46-48

TEXT: Some years ago, at one of the Moscow power stations,
there was a failure in the discs of the 11th and 12th stages of the
high-pressure cylinder of a turbine type BK-100-2 (VK-100-2).
Some time later, cracks were found in the disc of a second similar
turbine which had been running at the same power station for about
eight months. The metal was found to be satisfactory but the steam
had been of poor quality and there were cases when the dry residue
reached 2.0 to 1.6 mg/kg, the mean value being 0.3 to 0.4 mg/kg.
The major contaminant was alkaline. Engineer V.P. Lobanov
suggested that the failure had occurred because of cooling of the
discs during frequent and incorrect washing of the machine, with
consequent sudden temperature drop. Candidate of Technical Sciences
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S/096/61/000/003/005/012
E194/E155

An Investigation of the Action of Contaminated Low-Temperature
Steam on Steels 35KhNM and 1Kh18N9T in a Stressed Condition

Yu.M. Kostrikin considered that the damage resulted from contamination of the steam by alkali. The steam delivered to the 11th and 12th discs had a superheat of about 20 °C and could contain droplets of liquid which were fairly concentrated solutions of alkali. This explanation is worthy of consideration because cracking ceased when the quality of the steam at the station was improved. Moreover, at another station similar turbines were washed as often but there was much less alkali in the steam, and here no cracking was observed. Laboratory work was also carried out to elucidate the part played by thermal stresses and the influence of the medium on the stressed metal. The present article discusses only the influence of the quality of the medium. The tests were made on steels grade 35KhNM and 1Kh18N9T (35KhNM and 1Kh18N9T) in a special rig so made that steam with known amounts of contamination could be delivered to the test pieces. They were in the form of strips of metal bolted together in pairs between blocks of differing thickness so that the stress in the specimens could be

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An Investigation of the Action of Contaminated Low-Temperature Steam on Steels 35KhNM and 1Kh18N9T

calculated. The stress most commonly used was 60 kg/mm^2 but individual tests were made with stresses of 21.4 and 30 kg/mm^2 . The steam was at a pressure of 3 atm and approximately 20°C above the saturation temperature at the given pressure. The test solutions were: condensate, caustic soda solution, sodium chloride solution and various mixtures of them. In the tests with condensate or sodium chloride concentrations of up to 100 mg/litre, no damage was observed on specimens of steel 35KhNM or 1Kh18N9T. In tests with solutions containing mixtures of sodium hydroxide and sodium chloride cracks were found only in notched specimens stressed to 60 kg/mm^2 . In tests with a solution of 100 mg/litre sodium hydroxide after 200 hours all the specimens, both with and without notches, were cracked. Specimens of steel 1Kh18N9T were particularly badly damaged, especially the notched samples. The test system itself was also substantially damaged, particularly near the weld. ✓

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An Investigation of the Action of Contaminated Low-Temperature
Steam on Steels 35KhNM and 1Kh18N9T in a Stressed Condition

Test samples were also inserted at appropriate places in the steam pipes of a power station. One set of samples was left for nine months and another for twelve months and none of them were damaged. Metallographic examination showed that there were no defects or cracks in the metal. It is concluded that at steam conditions of above 3 atm and 160 to 170 °C cracking in stressed metal of both pearlitic and austenitic classes is due mainly to the presence of sodium hydroxide in the steam (in the absence of oxygen). There are 4 figures, 2 tables.

ASSOCIATION: Vsesoyuznyy teplotekhnicheskiy institut
(All-Union Heat Engineering Institute)

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